



METHODS OF TREATING OR PREVENTING DEMYELINATION USING THROMBIN INHIBITORS AND METHODS OF DETECTING DEMYELINATION USING NEUROFASCIN 155

SUMMARY

Researchers at the Eunice Kennedy Shriver National Institute of Child Health and Human Development ("NICHD"), seek CRADA partner or collaboration for development of agents to treat multiple sclerosis or other conditions associated with myelin remodeling by administering an agent that inhibits cleavage of Neurofascin 155 or Caspr1. The agent could be a thrombin inhibitor, an agent that inhibits thrombin expression, an anti-thrombin antibody that specifically inhibits thrombin mediated cleavage of Neurofascin 155, a mutated version or fragment of Neurofascin 155 or Caspr1, or antibodies to Neurofascin 155 or Caspr1.

REFERENCE NUMBER

E-151-2015

PRODUCT TYPE

- Therapeutics

KEYWORDS

- multiple sclerosis, thrombin inhibitors, antibody, anti-Neurofascin, anti-Caspr1

COLLABORATION OPPORTUNITY

This invention is available for licensing and co-development.

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DESCRIPTION OF TECHNOLOGY

Neurofascin 155 is a cell adhesion molecule that attaches myelin to axolemma. Contactin-associated protein (Caspr) is a major component of the perinodes. Perinodal astrocytes regulate nodal structure and myelin thickness by regulating thrombin-dependent cleavage of axo-glial junction attaching the outermost paranodal loops of myelin to the axon membrane. Agents which inhibit the cleavage of Neurofascin 155 or the cleavage of Caspr1 stabilize the node and may impede the immunological attack of myelin where the paranodes are attached to the axon.



The technology is directed to methods of treating diseases characterized by demyelination (such as Multiple sclerosis), white matter injury, or conditions associated with myelin remodeling by administering an agent that inhibits cleavage of Neurofascin 155 or Caspr1. The agent could be a thrombin inhibitor, an agent that inhibits thrombin expression, an anti-thrombin antibody that specifically inhibits thrombin mediated cleavage of Neurofascin 155, a mutated version or fragment of Neurofascin 155 or Caspr1, antibodies to Neurofascin 155 or Caspr1.

The technology also includes methods of detecting remodeling of myelin by detecting changes in levels of Neurofascin 125 and Neurofascin 30 in a biological sample, such as central spinal fluid or blood.

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POTENTIAL COMMERCIAL APPLICATIONS

- Treatment of demyelinating diseases, such as Multiple sclerosis.
- Treatment of diseases characterized by white matter injury or myelin remodeling.
- Monitoring the amount of or rate of remodeling of myelin to determine the efficacy of agents used demyelinating diseases.

COMPETITIVE ADVANTAGES

- Agents that inhibit cleavage of Neurofascin 155 or Caspr1 or inhibit thrombin activity are a novel approach to treating demyelinating diseases or diseases characterized by white matter injury.
- The methods of detecting modification in the amount or rate of remodeling of myelin can be used to determine the efficacy of treatments of neurological disorders and are less expensive than other methods currently used.

INVENTOR(S)

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DEVELOPMENT STAGE

- Pre-clinical (in vivo)

PUBLICATIONS

Manuscript in preparation.



PATENT STATUS

- **Foreign Filed:** PCT application, PCT/US2016/027776, filed April 15, 2016 entitled "METHODS OF TREATING OR PREVENTING DEMYELINATION USING THROMBIN INHIBITORS AND METHODS OF DETECTING DEMYELINATION USING NEUROFASCIN 155"

THERAPEUTIC AREA

- Central Nervous System, Mental and Behavioral, Pain